

Claims

[c1] We claim as our invention:

1. A golf club head comprising:

a face component composed of a metal material, the face component having striking plate portion and a return portion, the striking plate portion having a thickness in the range of 0.010 inch to 0.250 inch; and an aft-body attached to the return portion of the face component, the aft body having a crown portion and a sole portion;

wherein the golf club head has a coefficient of restitution of 0.81 to 0.94.

[c2] 2. The golf club head according to claim 1 wherein the striking plate portion has a thickness in the range of 0.055 inch to 0.125 inch.

[c3] 3. The golf club head according to claim 1 wherein the striking plate portion has a thickness in the range of 0.060 inch to 0.0110 inch.

[c4] 4. The golf club head according to claim 1 wherein the face component is composed of a material selected from the group consisting of titanium, titanium alloys, steel

and steel alloys.

- [c5] 5. The golf club head according to claim 1 wherein the striking plate portion has an aspect ratio no greater than 1.7.
- [c6] 6. The golf club head according to claim 1 wherein the striking plate portion has concentric regions of varying thickness with the thickest region in about the center.
- [c7] 7. The golf club head according to claim 1 wherein the striking plate portion comprises a central circular region having a base thickness, a first concentric region having a first thickness wherein the base thickness is greater than the first thickness, a second concentric region having a second thickness wherein the first thickness is greater than the second thickness, a third concentric region having a third thickness wherein the second thickness is greater than the third thickness, and a periphery region having a fourth thickness wherein the fourth thickness is less than the third thickness.
- [c8] 8. The golf club head according to claim 1 wherein the return portion has a thickness ranging from 0.020 inch to 0.150 inch.
- [c9] 9. The golf club head according to claim 1 wherein the moment of inertia about the Izz axis is greater than

3000 grams– centimeter squared.

- [c10] 10. The golf club head according to claim 1 wherein the face component has a mass ranging from 65 grams to 95 grams.
- [c11] 11. The golf club head according to claim 1 wherein the aft–body is composed of a plurality of plies of pre–preg material.
- [c12] 12. The golf club head according to claim 1 wherein the aft–body has a mass ranging from 15 grams to 50 grams.
- [c13] 13. The golf club head according to claim 1 wherein the golf club head has a volume ranging from 350 cubic centimeters to 510 cubic centimeters.
- [c14] 14. The golf club head according to claim 1 wherein the sole portion of the aft–body comprises a bottom section and a ribbon section.
- [c15] 15. The golf club head according to claim 1 wherein the return portion comprises an upper lateral section and a lower lateral section.
- [c16] 16. The golf club head according to claim 1 wherein the return portion comprises a heel lateral section and a toe lateral section.

- [c17] 17. The golf club head according to claim 1 wherein the return portion comprises an upper lateral section.
- [c18] 18. The golf club head according to claim 1 wherein the return portion comprises a lower lateral section.
- [c19] 19. The golf club head according to claim 1 further comprising at least one weight member.
- [c20] 20. A golf club head comprising:
a face component composed of a metal material, the face component having striking plate portion and a return portion, the striking plate portion having a thickness in the range of 0.010 inch to 0.250 inch; and
an aft-body attached to the return portion of the face component, the aft body having a crown portion and a sole portion;
wherein the moment of inertia about the I_{zz} axis through the center of gravity is greater than 3000 grams– centimeter squared, and the moment of inertia about the I_{yy} axis through the center of gravity is greater than 1900 grams– centimeter squared.
- [c21] 21. The golf club head according to claim 20 wherein the face component has a mass ranging from 65 grams to 95 grams.

- [c22] 22. The golf club head according to claim 20 wherein the aft-body is composed of a plurality of plies of pre-preg material.
- [c23] 23. The golf club head according to claim 20 wherein the aft-body has a mass ranging from 15 grams to 50 grams.
- [c24] 24. The golf club head according to claim 20 wherein the golf club head has a volume ranging from 350 cubic centimeters to 510 cubic centimeters.
- [c25] 25. The golf club head according to claim 20 wherein the sole portion of the aft-body comprises a bottom section and a ribbon section.
- [c26] 26. The golf club head according to claim 20 wherein the return portion comprises an upper lateral section and a lower lateral section.
- [c27] 27. The golf club head according to claim 20 wherein the return portion comprises a heel lateral section and a toe lateral section.
- [c28] 28. The golf club head according to claim 20 wherein the return portion comprises an upper lateral section.
- [c29] 29. The golf club head according to claim 20 wherein the return portion comprises a lower lateral section.

[c30] 30. The golf club head according to claim 20 wherein the golf club head has a coefficient of restitution ranging from 0.81 to 0.94.

[c31] 31. A golf club head comprising:
a face component composed of a forged metal material and comprising a return portion and a striking plate portion, the striking plate portion having an exterior surface and an interior surface, the striking plate portion extending from a heel section of the golf club head to a toe section of the golf club head, a return extending laterally inward from a perimeter of the striking plate portion, and an interior tubing for receiving a shaft, the interior tubing engaging an upper section of the return portion and a lower section of the return portion; and
an aft body composed of a plurality of plies of pre-preg, the aft body comprising crown portion and a sole portion, the crown portion attached to the upper section of the return portion at a distance of at least 0.50 inch from the perimeter of the striking plate portion, the sole portion secured to the lower section of the return portion at a distance of at least 0.50 inch from the perimeter of the striking plate portion.

[c32] 32. The golf club head according to claim 31 wherein the face component has a mass ranging from 65 grams to

95 grams.

- [c33] 33. The golf club head according to claim 31 wherein the aft-body has a mass ranging from 15 grams to 50 grams.
- [c34] 34. The golf club head according to claim 31 wherein the golf club head has a volume ranging from 350 cubic centimeters to 510 cubic centimeters.
- [c35] 35. The golf club head according to claim 31 wherein the sole portion of the aft-body comprises a bottom section and a ribbon section.
- [c36] 36. The golf club head according to claim 31 wherein the face is composed of a titanium alloy material.
- [c37] 37. The golf club head according to claim 31 wherein the moment of inertia is about the Izz axis is greater than 3000 grams – centimeter squared.
- [c38] 38. The golf club head according to claim 31 wherein the face component is composed of a material selected from the group consisting of titanium, titanium alloys, steel and steel alloys.
- [c39] 39. The golf club head according to claim 31 wherein the return portion comprises a lower lateral section.

[c40] 40. The golf club head according to claim 31 wherein the golf club head has a coefficient of restitution ranging from 0.81 to 0.94.

[c41] 41. A golf club head comprising:
a face component composed of a metal material, the face component having striking plate portion and a return portion, the striking plate portion having a thickness in the range of 0.010 inch to 0.250 inch; and
an aft-body attached to the return portion of the face component, the aft body having a crown portion and a sole portion;
wherein the striking plate portion has an aspect ratio ranging from 0.5 to 1.7.

[c42] 42. The golf club head according to claim 41 wherein the face component has a mass ranging from 65 grams to 95 grams.

[c43] 43. The golf club head according to claim 41 wherein the aft-body is composed of a plurality of plies of pre-preg material.

[c44] 44. The golf club head according to claim 41 wherein the aft-body has a mass ranging from 15 grams to 50 grams.

[c45] 45. The golf club head according to claim 41 wherein the

golf club head has a volume ranging from 350 cubic centimeters to 510 cubic centimeters.

[c46] 46. The golf club head according to claim 41 wherein the sole portion of the aft-body comprises a bottom section and a ribbon section.

[c47] 47. The golf club head according to claim 41 wherein the return portion comprises an upper lateral section and a lower lateral section.

[c48] 48. The golf club head according to claim 41 wherein the return portion comprises a heel lateral section and a toe lateral section.

[c49] 49. The golf club head according to claim 41 wherein the return portion comprises an upper lateral section.

[c50] 50. The golf club head according to claim 41 wherein the return portion comprises a lower lateral section.

[c51] 51. The golf club head according to claim 41 wherein the golf club head has a coefficient of restitution ranging from 0.81 to 0.94.

[c52] 52. A golf club head comprising:
a face component composed of a metal material, the face component having striking plate portion and a return portion, the striking plate portion having a thick-

ness in the range of 0.010 inch to 0.250 inch; and an aft-body attached to the return portion of the face component, the aft body having a crown portion and a sole portion;

wherein the golf club head has a volume ranging from 400 cubic centimeters to 525 cubic centimeters and a mass ranging from 175 grams to 225 grams.

[c53] 53. The golf club head according to claim 52 wherein the face component has a mass ranging from 65 grams to 95 grams.

[c54] 54. The golf club head according to claim 52 wherein the aft-body is composed of a plurality of plies of pre-preg material.

[c55] 55. The golf club head according to claim 52 wherein the aft-body has a mass ranging from 15 grams to 50 grams.

[c56] 56. The golf club head according to claim 52 wherein the sole portion of the aft-body comprises a bottom section and a ribbon section.

[c57] 57. The golf club head according to claim 52 wherein the return portion comprises an upper lateral section and a lower lateral section.

- [c58] 58. The golf club head according to claim 52 wherein the return portion comprises a heel lateral section and a toe lateral section.
- [c59] 59. The golf club head according to claim 52 wherein the return portion comprises an upper lateral section.
- [c60] 60. The golf club head according to claim 52 wherein the return portion comprises a lower lateral section.
- [c61] 61. The golf club head according to claim 52 wherein the golf club head has a coefficient of restitution ranging from 0.81 to 0.94.
- [c62] 62. A golf club head comprising:
a face component composed of a forged titanium alloy material and comprising a return portion and a striking plate portion, the striking plate portion extending from a heel section of the golf club head to a toe section of the golf club head, the return portion extending laterally inward at least 0.50 inch from a perimeter of the striking plate portion, the return portion extending laterally inward 360 degrees of the perimeter of the striking plate portion, and an interior tubing for receiving a shaft; and
an aft body composed of a plurality of plies of pre-preg and having a thickness ranging from 0.010 inch to 0.100 inch, the aft body comprising crown portion and a sole

portion comprising a bottom section and a ribbon portion, the crown portion attached to the upper section of the return portion, the sole portion attached to the lower section of the return portion, a heel end of the ribbon portion attached to a heel section of the return portion, and a toe end of the ribbon portion attached to a toe section of the return portion;

wherein the golf club head has a hollow interior, a volume ranging from 290 cubic centimeters to 600 cubic centimeters, a mass ranging from 175 grams to 225 grams, and a coefficient of restitution ranging from 0.81 to 0.94.

[c63] 63. The golf club head according to claim 62 wherein the golf club head has a volume ranging from 350 cubic centimeters to 510 cubic centimeters.

[c64] 64. The golf club head according to claim 62 wherein the striking plate portion has concentric regions of varying thickness with the thickest region about the center of the striking plate portion.